
Space Weather Forecast

Issued on Thursday, 08 August 2024 at 12:50 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Moderate solar activity expected. Chance of minor geomagnetic storms Day 3 (10 Aug).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate to High solar activity with four Moderate flares observed, the largest from the region just west of centre disc. There are eleven regions on the visible disc, the largest of which is in the southeast. Across the south-centre disc two further regions showed ongoing growth in their small spots trailer spots, also including the development of very small mixed polarity regions.

Two potentially Earth directed CMEs (Coronal Mass Ejections) occurred in the past 24 hours in associated with two separate moderate flares. The first produced a complex halo and may have coincided with a far sided event, complicating analysis. ENLIL analysis gives an arrival time early morning on Day 3 (10 Aug) but this is prone to high uncertainty due to interference on coronagraph imagery from the potential aforementioned far sided event. The second is a possible arrival later on Day 3 (10 Aug). Confidence in timings for both the CMEs is low.

Solar Wind / Geomagnetic Activity: Slow wind conditions persisted through the period. Interplanetary Magnetic Field was Weak while the north-south component was Weak and variable in direction. Geomagnetic activity remained Quiet to unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast to continue, with occasional Moderate-class flares expected and a slight chance of isolated Strong-class flares.

Solar Wind /Geomagnetic Activity: Two CMEs (Coronal Mass Ejections) have occurred in the past 24 hours which are likely to have an Earth-directed component. The first CME may have coincided with a far sided event, complicating analysis. Confidence in arrival times of these CMEs is currently very low, but arrivals possible from Day 3 (10 Aug). Additionally a CME which left the Sun on 07 Aug is expected to pass close later on Day 3 (10 Aug), with glancing impacts possible. Background slow winds are expected throughout with just a slight chance of connecting to any fast wind from a small coronal hole by the end of the period. Geomagnetic activity is expected to be Quiet with a chance of isolated Unsettled intervals. However, there is a chance of Active to G1 Minor Storms from Day 3 (10 Aug) due to any CME influence or coronal hole onset, with a slight chance of G2 Moderate storms if these events should co-align.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist around background levels, but with a chance of further

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enhancement given the occurrence of any notable flares. This gives a slight chance of reaching or exceeding the S1 Minor Radiation Storm level.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	15	50	20
Strong	G3	No	1	1	10	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	90	80	80	80
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)